2805

Instruction Manual

Power Supply Type 2805

A fully stabilised, two channel, mains powered instrument providing a ± 14 V DC or 28 V DC power supply. It can be used to power a variety of B&K instruments, primarily in the field of vibration testing. Maximum output is 200 mA/channel.

Brüel & Kjær

2-033.0623-2A

FILE COPY

9/84
PROPERTY OF DEPT. CL-
METROLOGY LAB.
DO NOT REMOVE
FROM AREA

POWER SUPPLY
TYPE 2805

Revision September 1982

CONTENTS

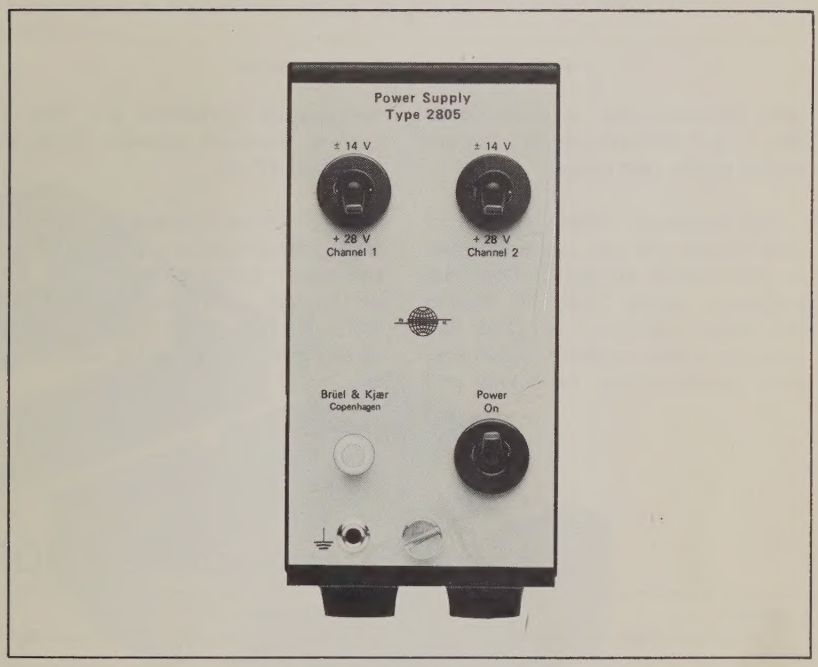
1. INTRODUCTION AND SPECIFICATIONS (PRODUCT DATA) 1

2. OPERATION 3

2.1. ENVIRONMENT 3
2.2. MOUNTING 3
2.3. CONNECTION OF MAINS SUPPLY 4
2.4. OUTPUT CONNECTIONS 5
± 14 V Supply 5
+ 28 V Supply 6
2.5. PLUGS AND CABLES 6
2.6. NOISE AND HUM 7

3. SERVICE AND REPAIR 8

DC Power Supply



FEATURES:

- 12 outputs, 2 channels
- ± 14 V or 28 V DC output
- Up to 5 outputs per channel
- Modular construction

USES:

- Power Supply for preamplifiers in vibration measurement set-ups
- Power Supply for instruments operating on ± 14 V and 28 V DC

The Power Supply Type 2805 has been designed for use together with the various B & K accelerometer preamplifiers and other instruments requiring 28 V DC or ± 14 V DC. It combines a sturdy, easy to handle design with low noise and high stability.

The 2805 can be used for supplying the following instruments with the power necessary for their operation:

Type 2634, 2635, 2651 Charge Amplifiers
Type 4291 Accelerometer Calibrator
Type 8306 Accelerometer
Type 2511 Vibration Meter
Type 1621 Tunable Band Pass Filter

The Type 2805 provides two identical supply channels, each with 5 microsocket outputs on the rear panel supplying 28 V DC. One or

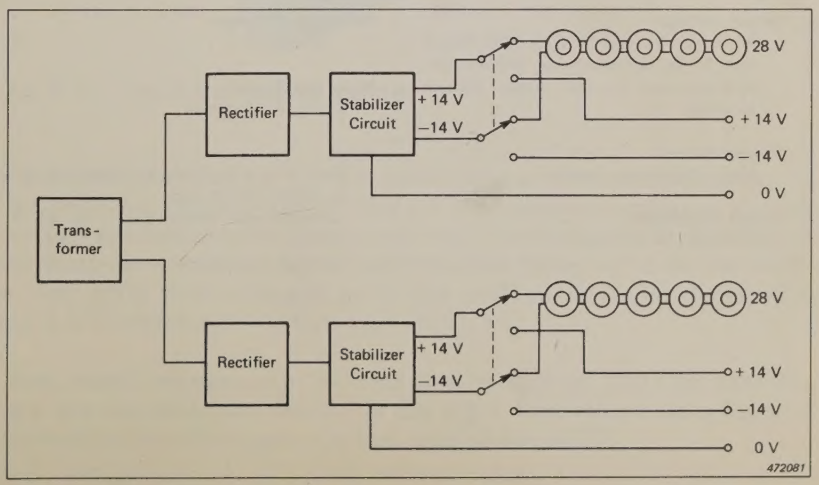


Fig.1. Block Diagram of the Type 2805

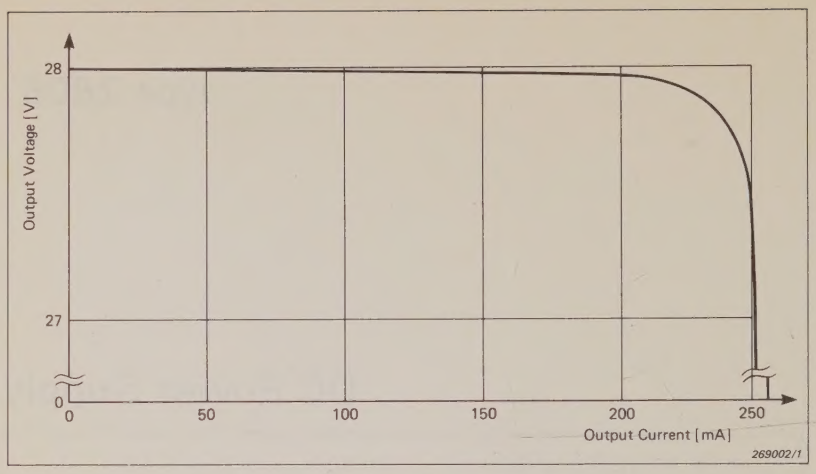


Fig.2. Output voltage V current loading

both channels can be switched to give ± 14 V DC available at a six pin socket on the rear panel.

The maximum output current is 200 mA per channel and the output is short-circuit protected. Over the frequency range 20 Hz to 20 kHz the output impedance is 0,2 Ω. The instrument has excellent output stability characteristics for mains and temperature variations and has a current overload recovery time of less than 20 μs.

Fig.2 shows a graph of the voltage output against current loading, the output tolerance being ± 3% for all current load conditions up to 200 mA. Noise and ripple amount to less than 200 μV at full load.

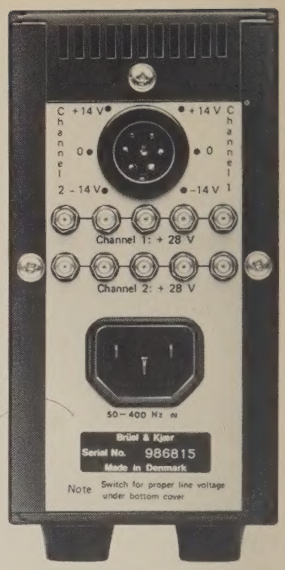


Fig.3. Rear Panel of the Power Supply Type 2805

The 2805 is designed according to the B & K modular system enabling it to be mounted together with other instruments, as well as to be used as a free-standing separate unit.

Specifications 2805

Output:
2 channels short circuit protected

Output Connections:
For each channel 5 × 10-32 NF sockets, also 1 × 6 pin Bulgin P.427 plug

Output Voltage:
28 Volts ± 3% or ± 14 Volts ± 3%. This is valid for all load conditions, ambient temperatures and selected output voltages specified

Output Current:
Max. 200 mA per channel

Output Impedance:
0,2 Ω (20 Hz to 20 kHz)

Output Stability:
Better than ± 0,05% for ± 10% variation in mains voltage

Transient Recovery Time:
Less than 20 μs

Temperature Range:
—10 to + 55°C

Noise and Ripple:
< 200 μV at full load

Input:
100, 115, 127, 220, 240 Volts AC (50 to 400 Hz, 40 VA max.
Complies with safety class I of IEC R 348

Dimensions:
Height: 132,6 mm (5,2 in)
Width: 69,5 mm (2,7 in)
Depth: 200,0 mm (7,9 in)
(B & K module cabinet, 2/12 of 19" rack module)

Weight:
1,95 kg (4,3 lb)

Accessories Included:
6-pole plug JP 4705
Power Cable and Fuse

2. OPERATION

2.1. ENVIRONMENT

The Power Supply Type 2805 may be used over a wide temperature range, extending from —10 to + 55°C (+ 14 to + 131°F), and in humidities up to 90% RH (non-condensing). Apart from ensuring that the ventilation grills are not covered there are no special handling precautions.

2.2. MOUNTING

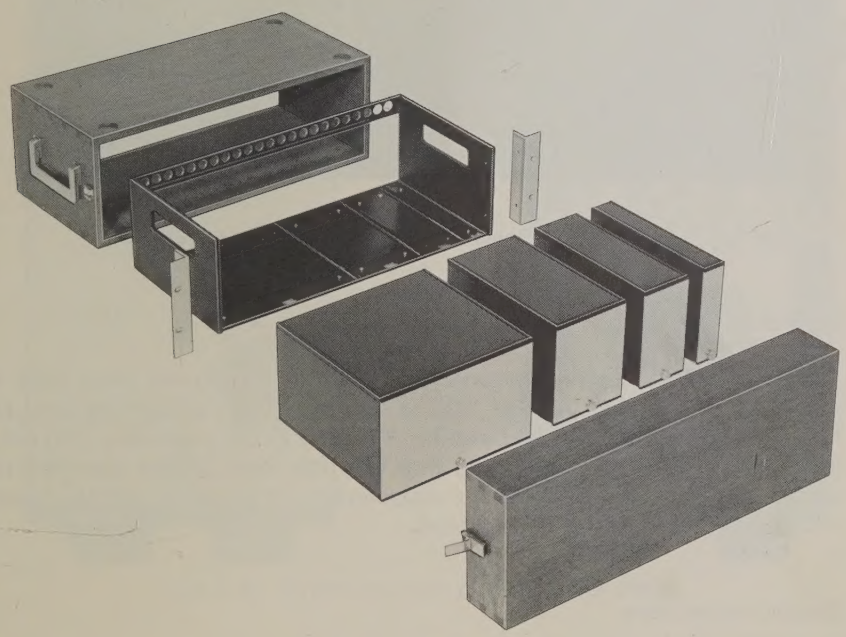


Fig.2.1. The B & K module system

The 2805 may be used free-standing on its four rubber feet or for convenience can be mounted in the B & K modular cassette system. Fig.2.1. The system consists of a metal frame KK 0014 in which the instruments can be attached. The frame has been designed to accept the instruments on a modular basis, each module being 1/12 of the inside width of the frame. The 2805 itself occupies 2/12 and could therefore be combined in one frame with other B & K instruments up to a total of 10/12.

The frame can be used alone, inserted in a 19" rack (the flanges GV 1037 for attaching the frame to the rack are included), be inserted in the B & K hard foam plastic Carrying Case KA 2000 or be inserted in a Mahogany Cabinet with lid KA 0027.

2.3. CONNECTION OF MAINS SUPPLY

The 2805 may be powered from a 100, 115, 127, 220 or 240 V (50 to 400 Hz) single phase AC mains supply. Before connecting the instrument to a mains supply the following checks and adjustments should be carried out to ensure safe operation.

Voltage setting

The mains voltage setting is displayed on the VOLTAGE SELECTOR located in the underside of the instrument, Fig.2.2. To select the required voltage setting unscrew and remove the knob which holds the fuse at the centre of the selector. The selector can then be turned, using a wide-bladed screwdriver, until the white mark is adjacent to the required setting. After checking the fuse (see *fuse selection*) it may be replaced along with the black knob.

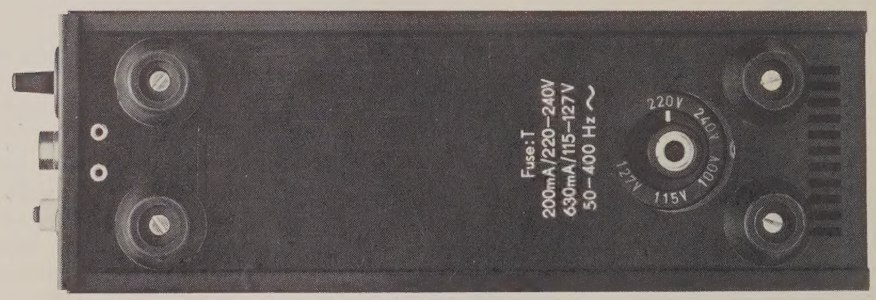


Fig.2.2. Position of Voltage Selector

Fuse selection

The fuse may be removed by unscrewing and removing the black knob in the centre of the VOLTAGE SELECTOR. For 100 to 127 V supplies a 630 mA slow blow fuse (B & K No. VF 0032) should be used and for 220 and 240 V supplies a 200 mA slow blow fuse (B & K No. VF 0012). Make sure that only the fuses of the specified type and the required rated current are used for replacement. The use of mended fuses and the short circuiting of fuse holders is prohibited.

Supply connections

Once the mains voltage setting and fuse have been checked the mains supply may be connected to the MAINS INPUT socket of the instrument using the Power Cable AN 0010 provided. To fit a suitable mains plug to the cable see Fig.2.3.

For maximum operating safety the protective (green/yellow) conductor of the Power Cable should be connected to a suitable earth, such as the protective earth of a mains socket output. The use of extension cables without protective conductor shall be avoided.

In countries where the use of a mains socket outlet without protective conductor is standard the mains supply should incorporate an authorised earth leakage circuit breaker.

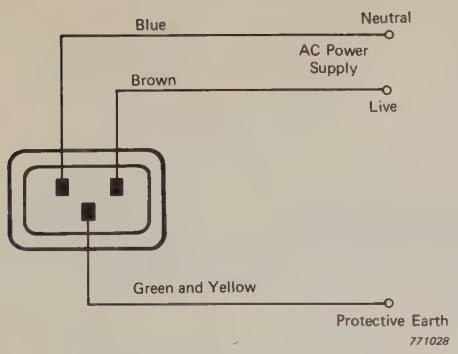


Fig.2.3. Connections to the Power Input Socket

2.4. OUTPUT CONNECTIONS

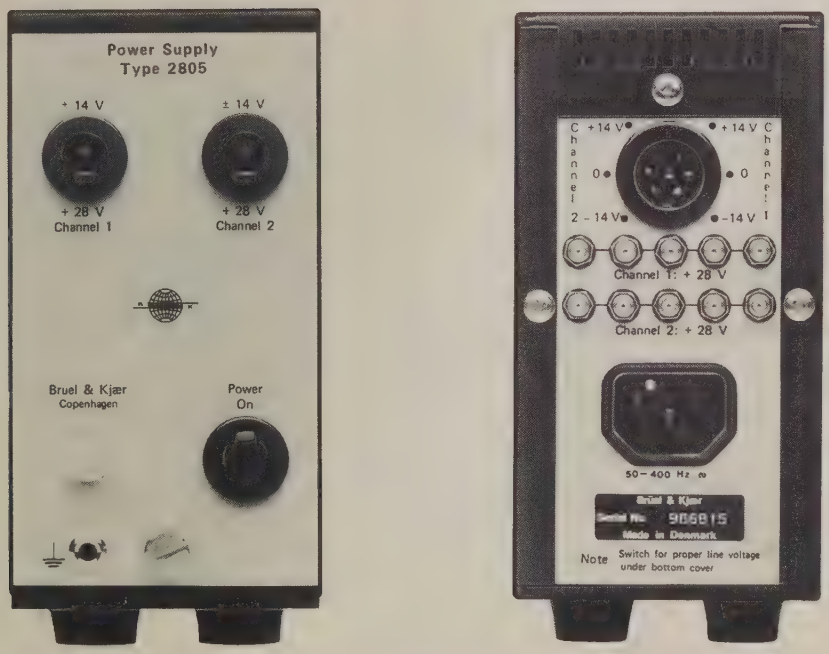


Fig.2.4. Front and rear panels of the 2805

2.4.1. ± 14 V Supply

To select ± 14 V for either/or both channels, set the appropriate Output Voltage Switch on the front panel to the "up" position Fig.2.4. The + 14, 0, —14 V DC supply is then available at the 6 pin Bulgin socket on the rear panel, which accepts the B & K plug JP

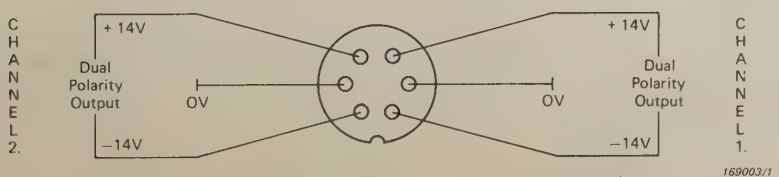


Fig.2.5. Connections of 6 pin plug (external view)

4705. The socket connections are shown in Fig.2.5. The maximum current that can be drawn is 200 mA.

2.4.2. + 28 V supply

To select + 28 V for either/or both channels, set the appropriate Output Voltage Switch on the front panel to the "down" position Fig.2.4. + 28 V is then available at each of the microsockets on the rear panel (5 per channel). The microsockets will accept the miniature coaxial plug JP 0012.

2.5. PLUGS AND CABLES

For ± 14 V supplies the 6 pin Bulgin plug JP 4705 is provided with the instrument. Cables for feeding the output to other instruments should be ordered separately. 7-core cable AD 0006, 8-core AD 0007 or the single core AC 0016 are ideally suited for this purpose.

For + 28 V supplies the miniature connectors JP 0012 should be used with the various types of transducer cables available. The cables are usually supplied in 1,2 m (4 ft) or 3 m (10 ft) lengths complete with connectors, Fig.2.6.

B & K Cable Type	Part Identities	Material	Max. Temp	Length	Capacitance
AO 0038	Miniature Plug JP 0012 — AC 0005 — Miniature Plug JP 0012	Teflon insulated mininoise cable	260° C (500° F)	~ 1,2 m (4 ft)	~ 105 pF
AO 0089	Miniature Plugs — AC 0032 — Reinforced	Reinforced PVC insulated mininoise cable	100° C (212° F)	~ 3 m (10 ft)	~ 300 pF
AO 0122	Miniature Plugs — AC 0200 — Reinforced	Teflon insulated mininoise cable	260° C (500° F)	~ 3 m (10 ft)	~ 300 pF

780198/1

Fig.2.6. Miniature, low noise, accelerometer cables supplied with plugs fitted

If longer cables are required they can be made up individually using the low noise, Teflon insulated cable AC 0005, which is available in lengths up to 180 m (600 ft). The miniature connectors JP 0012 are available either in sets of 20 with the Plug Mounting Kit UA 0129, which contains tools and instructions for mounting the plugs, Fig.2.7, or in sets (UA 0130) containing just 25 plugs.

It should be noted that there will be a potential drop along the cables due to the cable impedance. The series impedance of the accelerometer cable shown in Fig.2.6 is 0,5 Ω/m. Therefore, where very long lengths of cable are being used and large output currents are required it may be advisable to use the 6 pin Bulgin output with conventional cable.

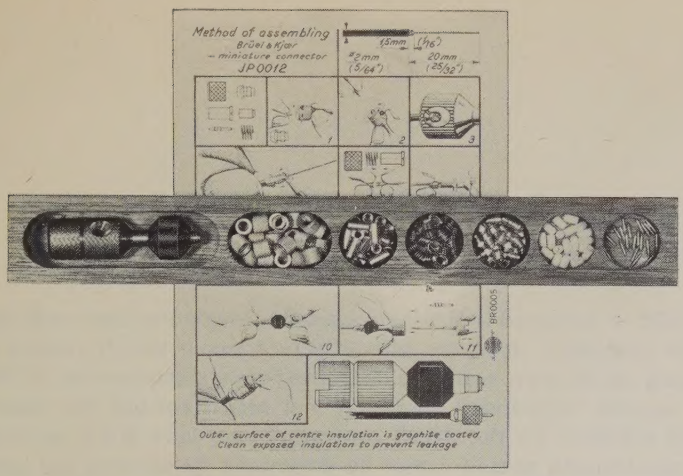


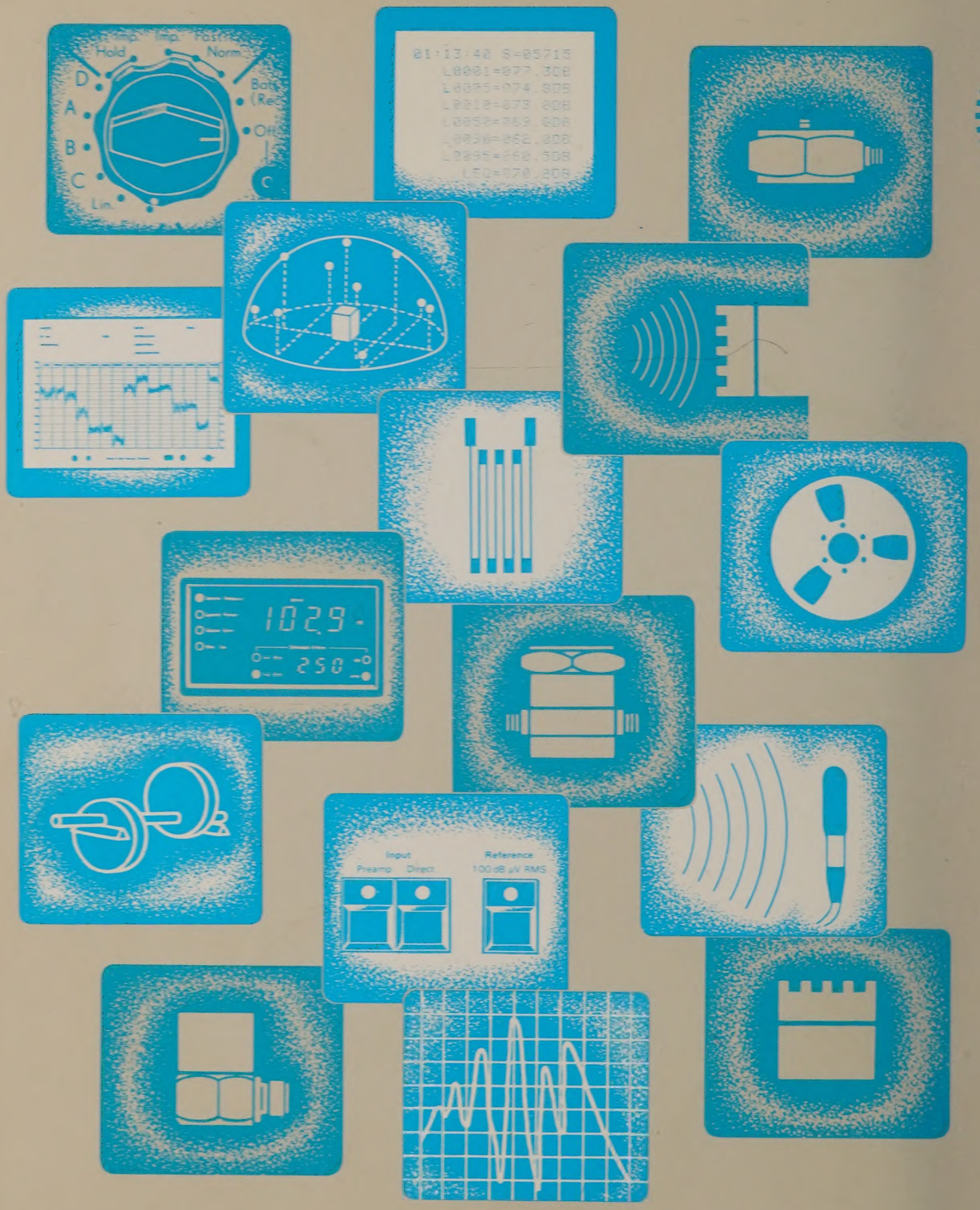
Fig.2.7. Plug Mounting Kit UA 0129

2.6. NOISE AND HUM

A certain amount of noise and hum may be induced in instruments powered from any non-battery supply because of magnetic fields. Should this be a problem when measuring very low signals, a larger distance between the power supply and the preamplifier will reduce the noise level.

3. SERVICE AND REPAIR

The 2805 is designed and constructed to provide the user with many years of safe, trouble free operation. However, should a fault occur which impairs its correct function and operating safety then it should be immediately disconnected at the mains source and secured against unintended operation. For repair consult the separate Service Instruction Manual available for the 2805 or contact your local B & K service representative. Under no circumstances should repair be attempted by persons not qualified in the service of electronic instrumentation.



Brüel & Kjær DK-2850 NÆRUM, DENMARK · Telephone: + 45

101117